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(54) Movable decorative assembly

(57) A decorative assembly comprises a base (e.g. in the form of a flowerpot), a hollow flexible decorative item (e.g. a cactus 34) mounted on the base, drive means within the base, and at least one actuator, driven by the drive means, extending up into the hollow item and operative to deform the item from within to vary the configuration of the item unexpectedly. An electric motor of the drive means may be controlled by a switch sensitive to sound, light, heat, smoke or smell.

FIG.2

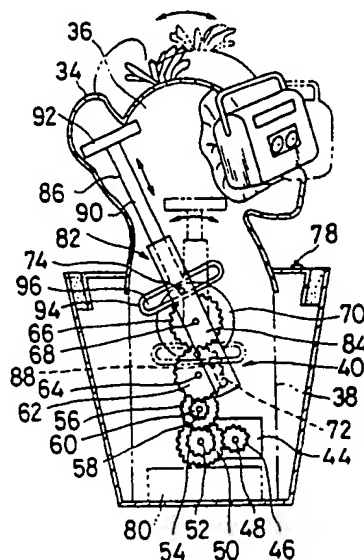


FIG. 1

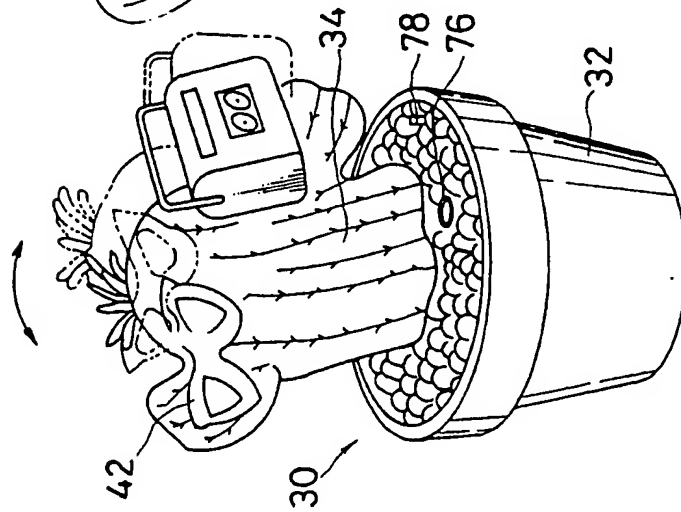


FIG. 3

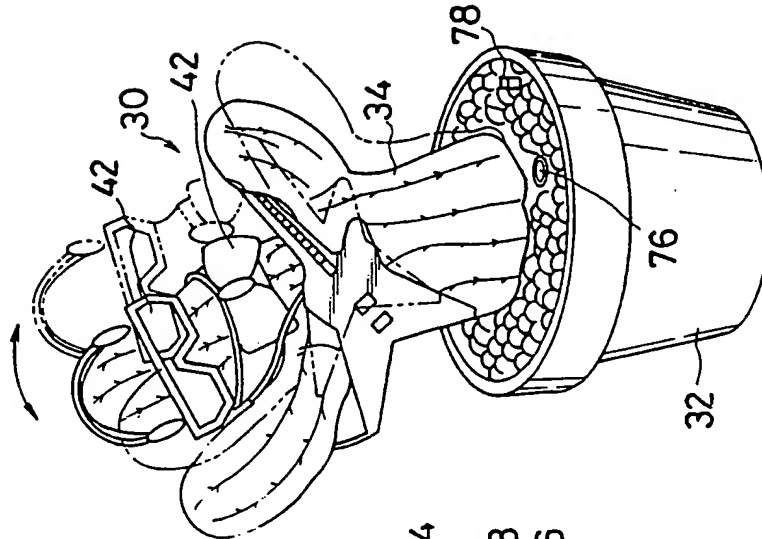
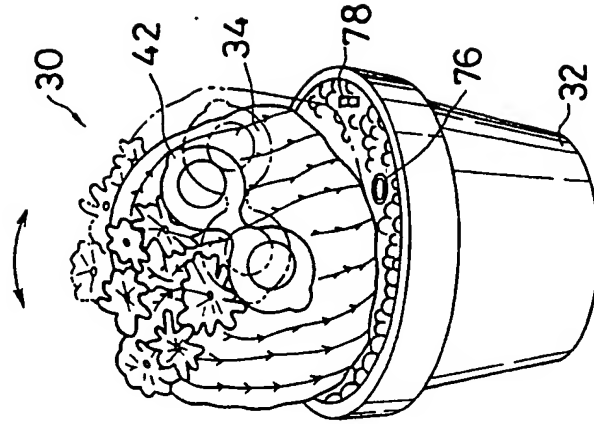


FIG. 4



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FIG. 5

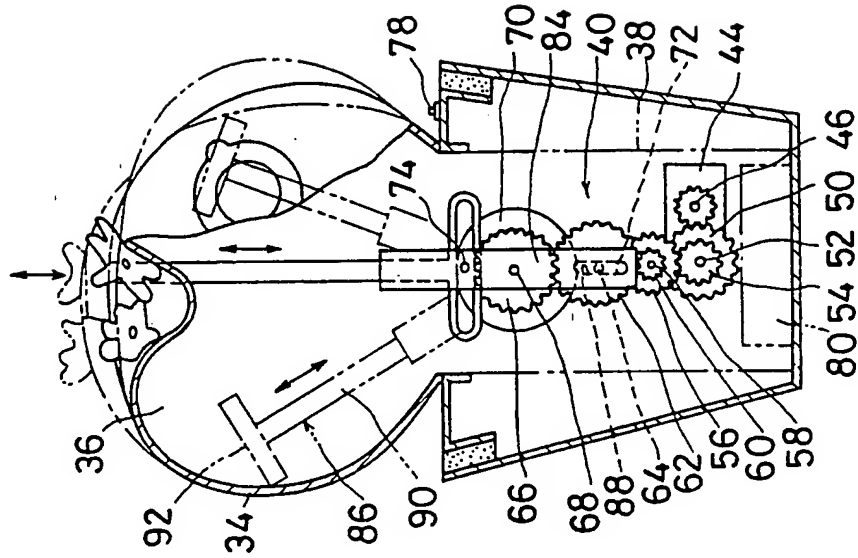


FIG. 2

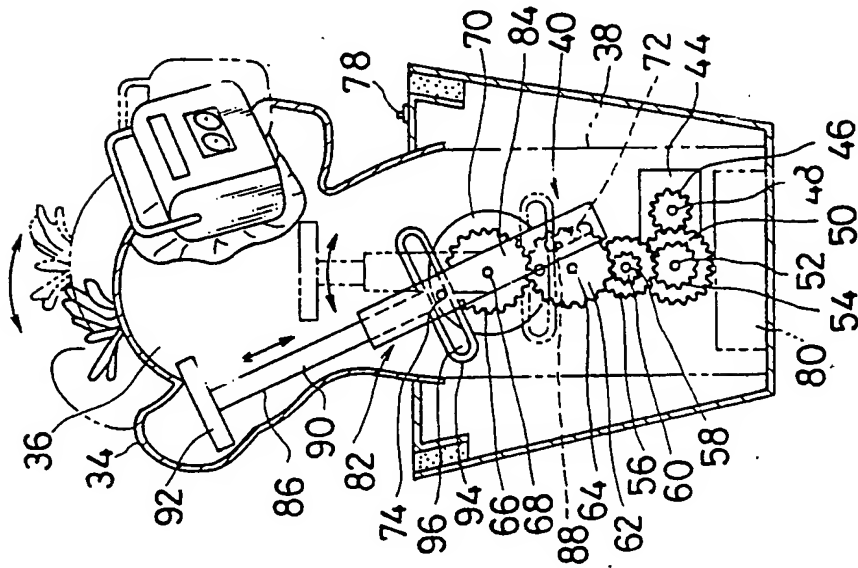


FIG. 6

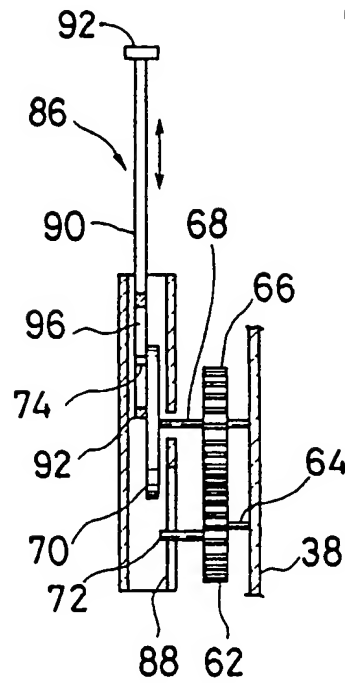
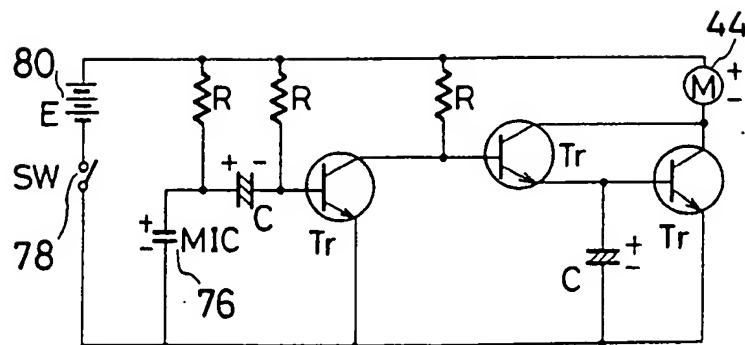


FIG. 7



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FIG.10

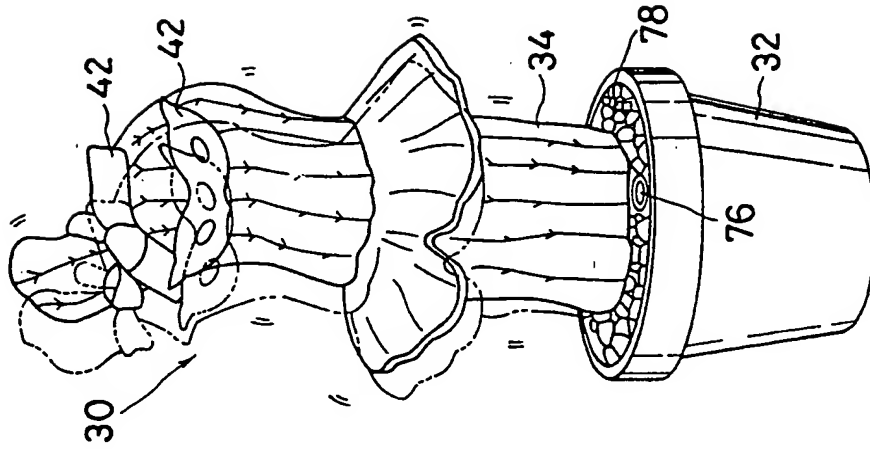


FIG. 8

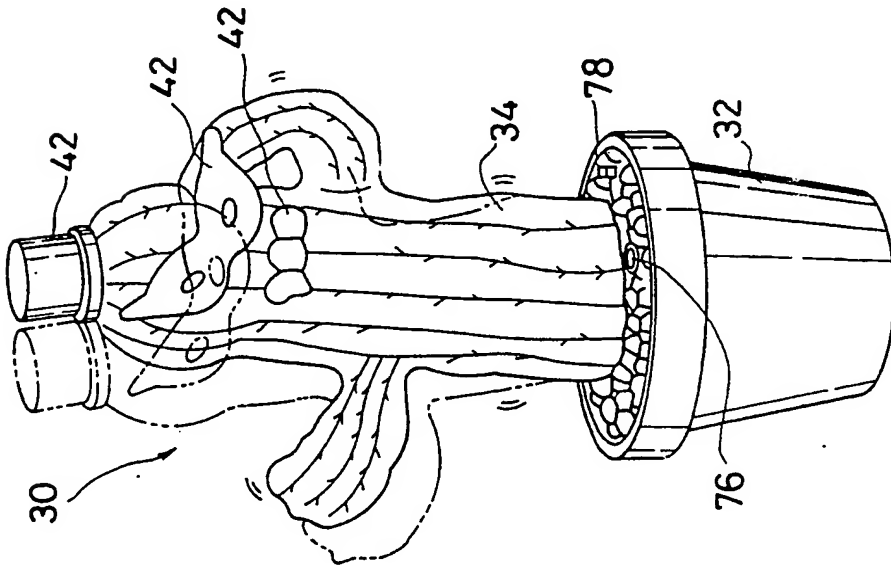


FIG. 9

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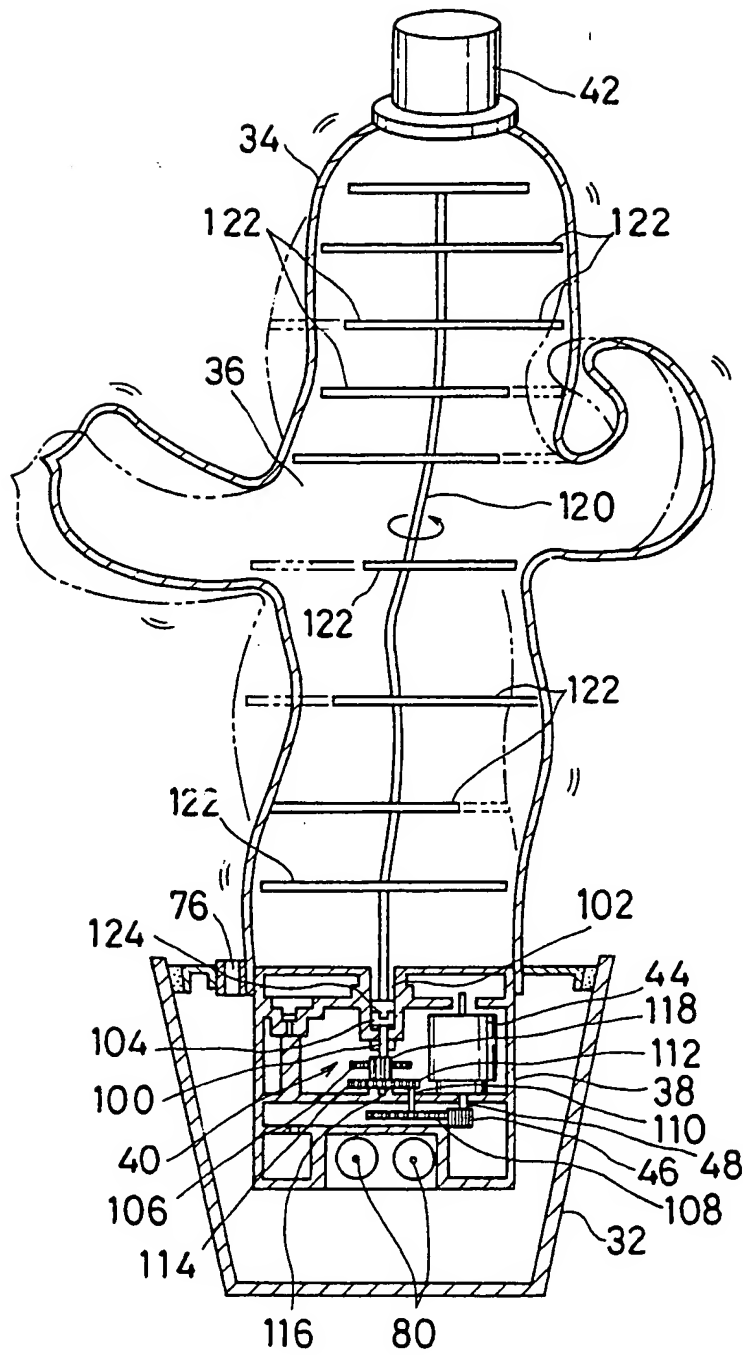


FIG. 11

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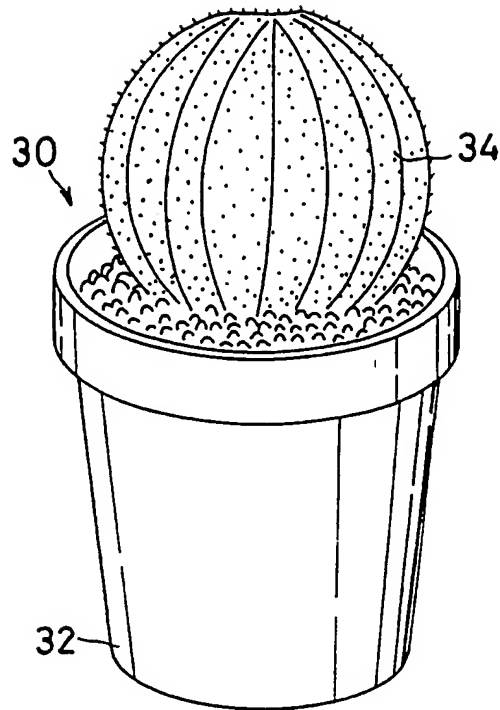


FIG. 12

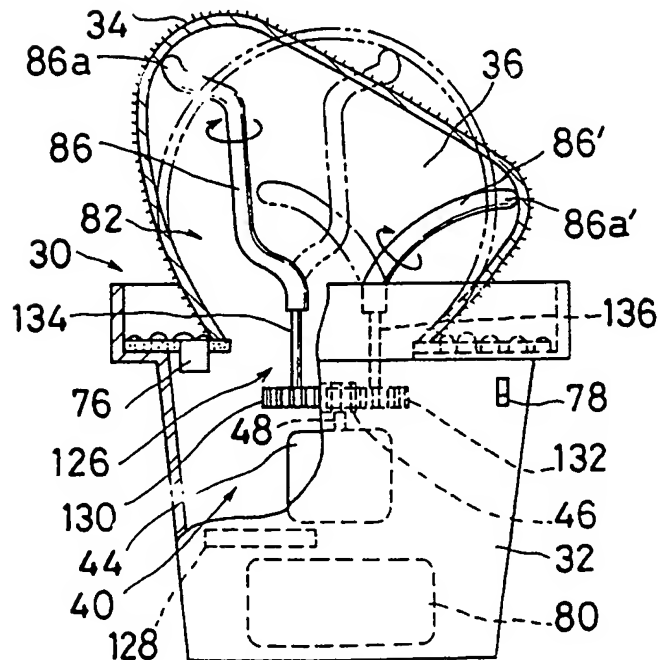
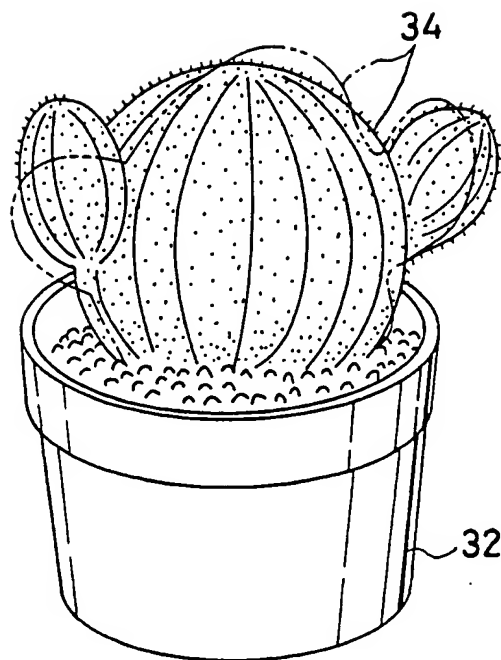


FIG. 13



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FIG. 15

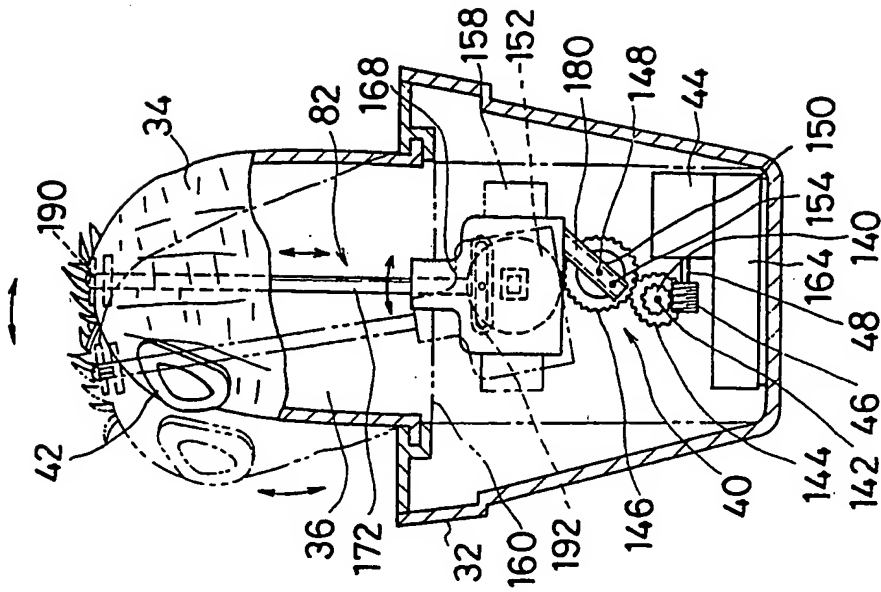
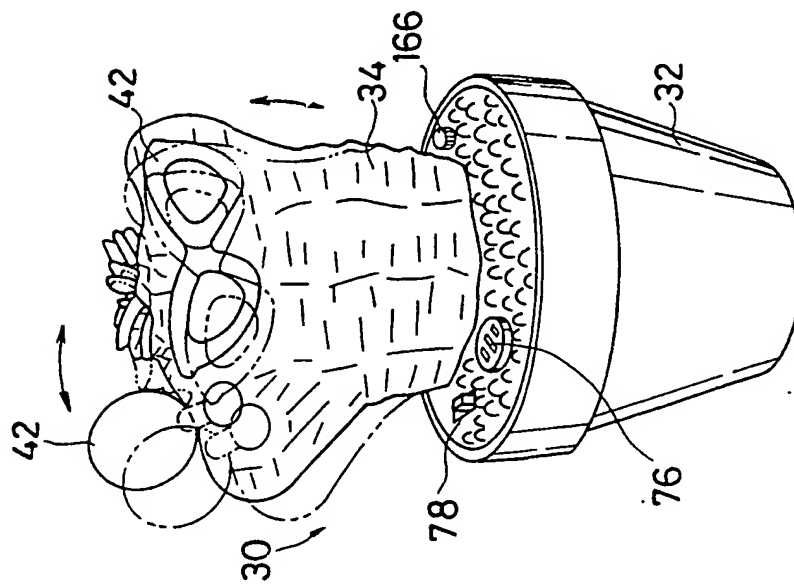


FIG. 14



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FIG. 16

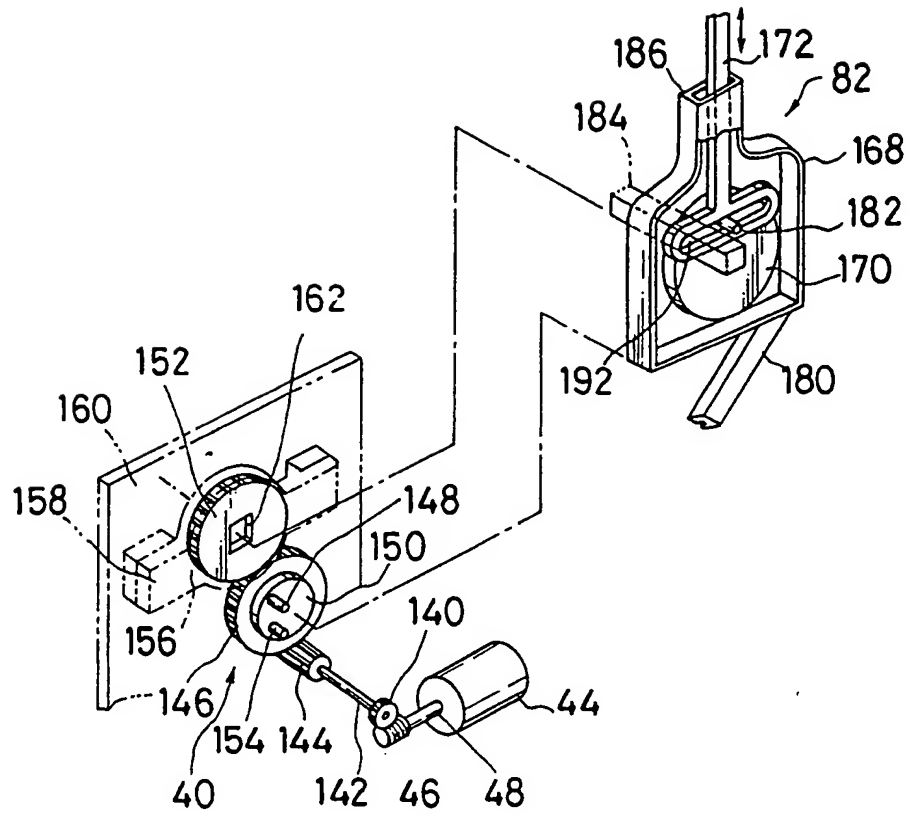


FIG. 17

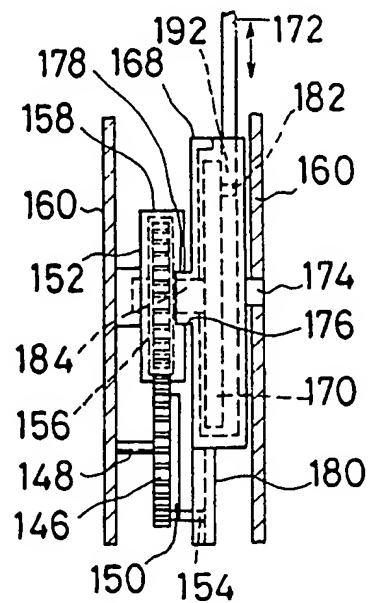


FIG. 18

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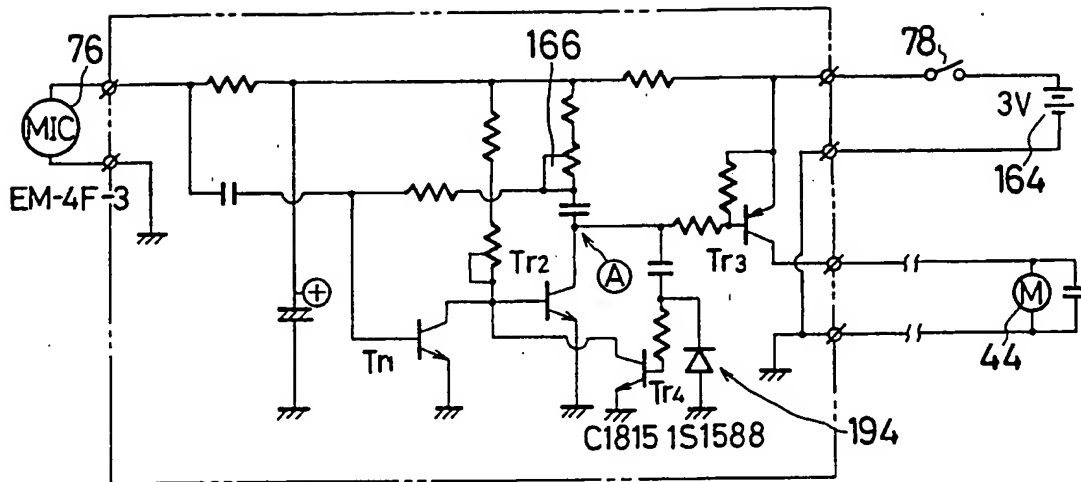
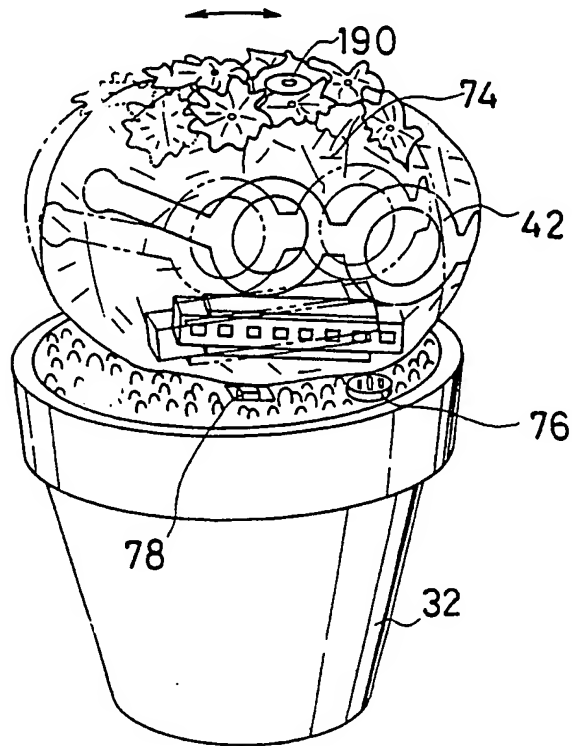


FIG. 19



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FIG.20

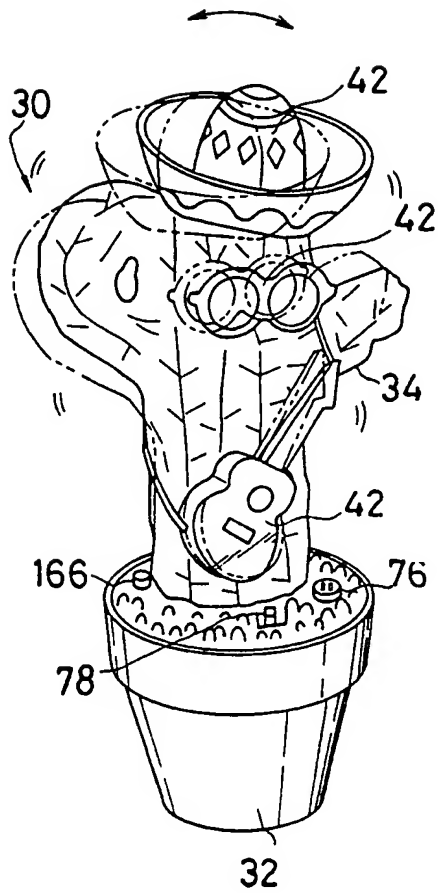
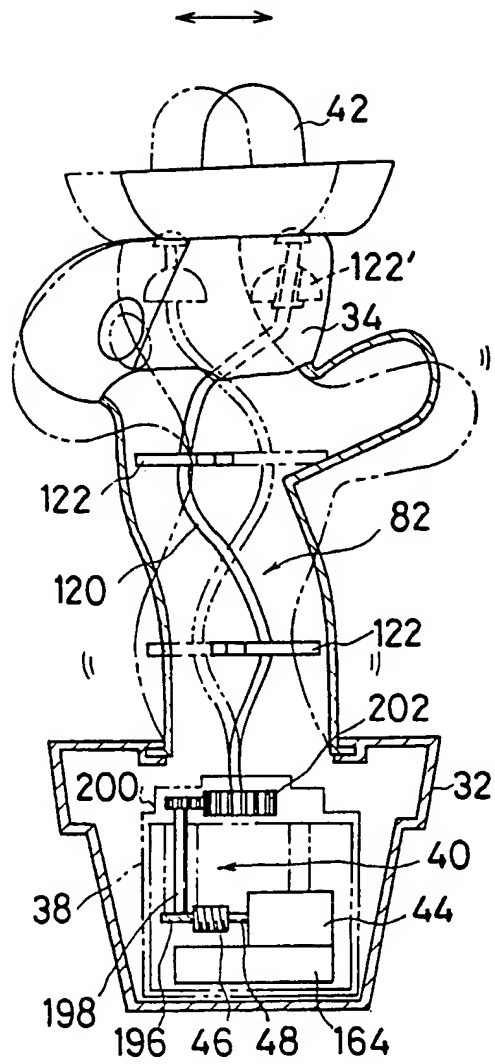


FIG.21



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FIG. 23

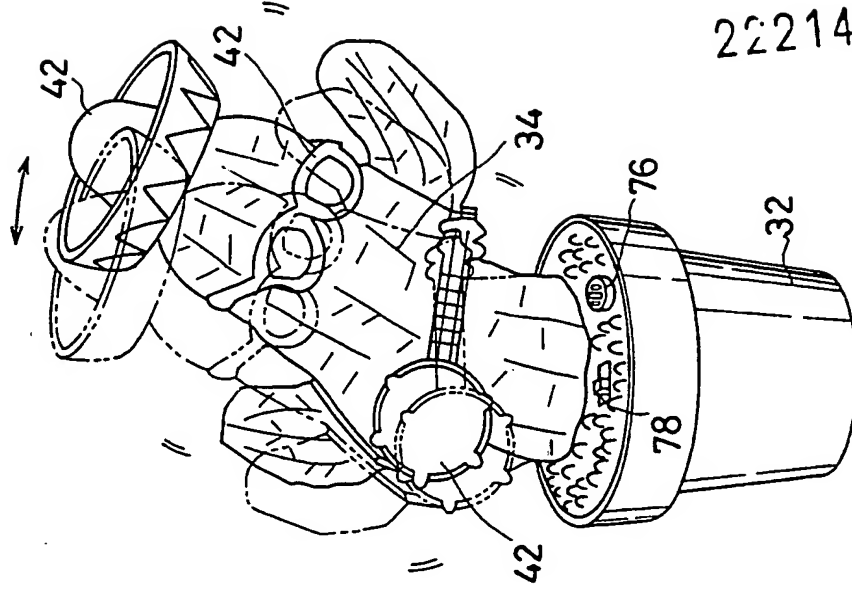
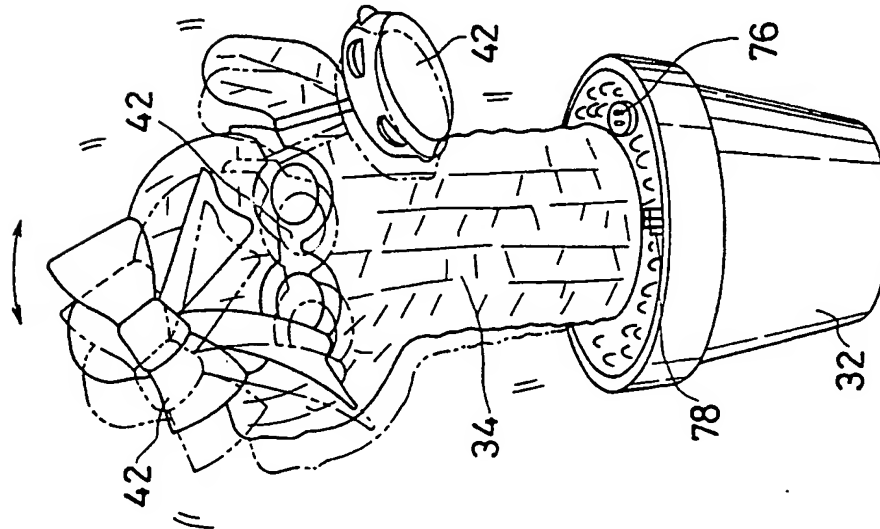


FIG. 22



TITLE OF THE INVENTION
MOVABLE DECORATIVE ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to a movable decorative assembly, and more particularly to a movable decorative assembly wherein variation means arranged in a hollow covering is actuated through a drive section to vary the appearance and/or configuration of the hollow covering due to pressing from the inside of the covering.

In general, an article made in imitation of a flower, a cactus or the like which has been conventionally used as an ornamental or decorative interior is stationarily placed in a living space or the like.

Unfortunately, such a conventional stationary ornament readily loses the popularity with the lapse of time. In view of this respect, a demand is recently increased for providing the article with any motion.

Accordingly, it would be highly desirable to develop a movable decorative assembly which is capable of being moved to exhibit unexpected variations in configuration and/or appearance of a covering while maintaining a conventional ornamental effect in its stationary state.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the present invention, a movable decorative assembly is provided. The movable decorative assembly includes a drive section which includes a motor, a drive circuit for driving the motor and a transmission mechanism for transmitting an output of said motor. Also, the assembly includes a hollow covering made of a deformable material and arranged in a manner to be fixed relative to the drive section and variation means operatively connected to the drive section and including a covering actuator for pressedly actuating the covering to

vary the configuration of the covering. The variation means actuates the covering actuator to cause a locus of movement of the covering actuator to extend outwardly from the configuration of the hollow covering defined when the covering is kept free, resulting in outwardly pressing the covering from the inside to vary the configuration of the covering.

In a preferred embodiment of the present invention, the drive circuit includes a sensor switch including a sensor for detecting a predetermined external stimulus and controlling the operation of the motor. The external physical stimulus is selected from the group consisting of sound, light, heat, smoke, gas and smell.

In a preferred embodiment of the present invention, the drive circuit includes a power supply.

In a preferred embodiment, the covering actuator comprises at least one actuation member carrying out rotation and so arranged that a center of the rotation is deviated from a center of the actuation member. The actuation member may be connected directly to an output side of the drive section. The variation means may further comprise at least one actuation shaft rotatably arranged and connected to an output side of the drive section, wherein the actuation member is mounted on the actuation shaft and rotated about the actuation shaft. The actuation shaft may be curved.

Alternatively, the covering actuator may comprise an oscillating element connected to an output side of the drive section and an actuation element arranged so as to carry out reciprocation with respect to the oscillating element.

The covering actuator may comprise an oscillating element, a rotary element arranged in the oscillating element and a vertically movable element operatively connected to the rotary element.

In the movable decorative assembly of the present

invention constructed as described above, the appearance of the covering is varied through the variation means which is arranged in the covering in a manner not to be observed from the exterior, resulting in giving a viewer unexpected interest and/or surprise.

For example, the variation means arranged in the hollow covering is actuated through the drive section when the sensor switch detects a predetermined external stimulus such as sound, light, heat or the like. This results in the covering actuator being operated to pressingly actuating the hollow covering to vary the configuration of the covering.

Accordingly, it is an object of the present invention to provide a movable decorative assembly which is capable of permitting the configuration of the assembly to be unexpectedly varied to give a viewer interest and/or surprise.

It is another object of the present invention to provide a movable decorative assembly which is capable of being moved upon detection of an external stimulus to vary the configuration of the assembly.

It is a further object of the present invention to provide a movable decorative assembly which is capable of carrying out the above-described objects with a simple structure.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention,

reference is had to the following description taken in connection with the accompanying drawings in which like reference numerals designate like or corresponding parts throughout; wherein:

Fig. 1 is a perspective view showing an embodiment of a movable decorative assembly according to the present invention;

Fig. 2 is a vertical sectional view of the assembly shown in Fig. 1;

Fig. 3 is a perspective view showing another embodiment of a movable decorative assembly according to the present invention;

Fig. 4 is a perspective view showing a further embodiment of a movable decorative assembly according to the present invention;

Fig. 5 is a vertical sectional view of the assembly shown in Fig. 4;

Fig. 6 is a sectional side elevation view showing a transmission mechanism and variation means incorporated in each of the embodiments shown in Figs. 1 to 5;

Fig. 7 is a circuit diagram showing an electrical connection in each of the embodiments shown in Figs. 1 to 5;

Fig. 8 is a perspective view showing still another embodiment of a movable decorative assembly according to the present invention;

Fig. 9 is a vertical sectional view of the assembly shown in Fig. 8;

Fig. 10 is a perspective view showing yet another embodiment of a movable decorative assembly according to the present invention;

Fig. 11 is a perspective view showing even another embodiment of a movable decorative assembly according to the present invention;

Fig. 12 is a vertical sectional view of the assembly shown in Fig. 11;

Fig. 13 is a perspective view showing a modification of the embodiment shown in Fig. 11;

Fig. 14 is a perspective view showing a still further embodiment of a movable decorative assembly according to the present invention;

Fig. 15 is a partly vertical sectional view of the assembly shown in Fig. 14;

Fig. 16 is a fragmentary exploded perspective view showing a drive section and variation means incorporated in the embodiment shown in Fig. 14;

Fig. 17 is a fragmentary sectional view showing the drive section and variation means assembled together;

Fig. 18 is a circuit diagram showing an electrical connection in the embodiment shown in Fig. 14;

Fig. 19 is a perspective view showing a modification of the embodiment shown in Fig. 14;

Fig. 20 is a perspective view showing a yet further embodiment of a movable decorative assembly according to the present invention;

Fig. 21 is a vertical sectional view of the embodiment shown in Fig. 20; and

Figs. 22 and 23 each are a perspective view showing a modification of the embodiment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Now, a movable decorative assembly of the present invention will be described hereinafter with reference to the accompanying drawings.

Figs. 1 and 2 show an embodiment of a movable decorative assembly according to the present invention, Fig. 3 shows another embodiment of the present invention, and Figs. 4 and 5 show a further embodiment of a movable decorative assembly according to the present invention. A movable decorative assembly of each of the illustrated embodiments is generally designated by reference numeral 30

and includes a flowerpot 32 and a hollow covering 34 made in imitation of cactus and arranged in the flowerpot 32. The covering or cactus 34 is made of a deformable or flexible material such as sponge or the like and formed with an inner space 36 therein. The flowerpot 32 is provided therein with a casing 38 in which a drive section 40 is arranged. The hollow covering or cactus 34 is securely fitted at a lower portion thereof on an upper portion of the casing 38. The cactus 34 is provided on an outer surface thereof with at least one symbolic element 42 selected from the group consisting of a glass, a muffler and the like which serves to indicate a face.

The drive section 40 includes a motor 44, a gear 46 fixed on a revolving shaft 48 of the motor 44, a gear 50 fixed on a support shaft 52 and meshed with the gear 46, a gear 54 fixed on the support shaft 52 in parallel with the gear 50, a gear 56 fixed on a support shaft 58 and engaged with the gear 54, a gear 60 fixed on the support shaft 58 in parallel with the gear 56, a gear 62 fixed on a support shaft 64 and engaged with the gear 60, a gear 66 fixed on a support shaft 68 and engaged with the gear 62, and a rotary disc 70 fixed on the support shaft 68 in parallel with the gear 66. The gear 62 is provided on a portion of a surface thereof adjacent to an outer periphery thereof with a pin 72 in a manner to extend therefrom and the rotary disc 70 is likewise provided on a portion of a surface thereof adjacent to an outer periphery thereof with a pin 74 in a similar manner.

A portion of the drive section 40 except the motor 44 constitutes such a transmission mechanism as shown in Fig. 6 for transmitting the output of the motor 44 to the hollow covering or cactus 34 arranged in a manner to be fixed relative to the drive section.

A drive circuit for the motor 44 may be constructed as shown in Fig. 7. More particularly, the drive circuit includes a sensor switch 76 which includes a sensor for

sensing a predetermined external stimulus such as sound, light, heat or the like and serves to actuate the motor 44. The drive circuit also includes a main switch 78 and a power supply 80. The sensor switch 76 and main switch 78 each are arranged in a manner to be exposed at a part thereof from an upper surface of the flowerpot 32 and the power supply 80 is replaceably arranged in the casing 38. Alternatively, the power supply may be eliminated. In this instance, the movable decorative assembly may be connected to an external power supply.

The hollow covering or cactus 34 is provided therein with variation means 82 for varying the configuration and/or an appearance of the covering or cactus 34. The variation means 34 includes an oscillating element 84 formed into a hollow shape and an actuation element 86 slidably inserted at a lower portion thereof into the hollow oscillating element 84 in such a manner that its upper portion is constantly projected from an upper end of the hollow member 84. The hollow oscillating element 84 is formed on a lower portion thereof with a guide groove or slot 88 extending in a longitudinal direction thereof, in which the pin 72 provided at the gear 62 of the drive section 40 is loosely fitted so as to act as an output end of the drive section 40. This results in the oscillating element 84 being pivotally moved about a fulcrum defined by the support shaft 68 with the rotation of the gear 62.

The actuation element 86 is formed of a vertical member 90 and horizontal members 92 and 94 mounted on both ends of the vertical member 90 into a substantially I-shape. The horizontal member 94 is formed with a guide groove 96 extending in a longitudinal direction thereof, in which the pin 74 provided at the rotary disc 70 of the drive section 40 is engagedly fitted so as to serve as an output end of the drive section 40. This results in the actuation element 86 being radially moved about the support

shaft 68 with the rotation of the rotary disc 70 while being supported in the hollow oscillating element 84 in such a manner that a part of a locus of vertical movement of the actuation element 86 extends outwardly from the configuration of the covering or cactus 34 defined when it kept free.

In the movable decorative assembly 30 of each of the embodiments constructed as described above, when the sensor switch 76 detects a predetermined external stimulus such as sound or the like while the main switch 78 is kept turned on, the motor 44 is rotated to actuate the drive section 40 comprising a plurality of the gears. This leads to the pivotal movement of the hollow oscillating element 84 about the support shaft 68 because the pin 72 of the gear 62 is engaged with the guide groove 88 formed at the oscillating element 84, as described above. Also, this results in the actuation element 86 being vertically moved because the pin 74 of the rotary disc 70 is engaged with the guide groove 96 provided at the horizontal member 94 slidably fitted in the hollow oscillating element 84. This results in a locus of slide movement of the actuation element 86 extending outwardly from the configuration of the covering obtained when it is kept free, so that an inner surface of the cactus 34 may be outwardly pressed and vertically expanded to lead to a variation in configuration of the cactus 34 and a variation of the symbolic element 42 such as a glass, a muffler or the like, resulting in exhibiting unexpected variations in configuration and/or appearance of the cactus sufficient to give a viewer unexpected interest and/or surprise. Also, the variation means 82 is not observed from the exterior, so that the viewer may take additional interest.

The embodiment shown in Figs. 1 and 2 is different in relative phase relationship between the pins 72 and 73 from that shown in Figs. 4 and 5. The phase difference may be adjusted by varying a manner of meshing between the

gears 62 and 66, so that a phase relationship between the oscillation of the oscillating element 84 and its expansion may be determined as desired, resulting in the element 84 exhibiting interesting movement.

Figs. 8 and 9 and Fig. 10 each show a further embodiment of a movable decorative assembly according to the present invention.

A movable decorative assembly 30 of each of the illustrated embodiments likewise includes a flowerpot 32 and a hollow covering or cactus 34 set in the flowerpot 32. The covering or cactus 34 is made of a deformable material such as sponge or the like and formed with an inner space 36 therein. The flowerpot 32 is provided therein with a casing 38 in which a drive section 40 is arranged. The covering or cactus 34 is securely fitted on an upper portion of the casing 38. The cactus 34 is provided on an outer surface thereof with symbolic elements 42 such as a glass, a hat, a ribbon a tie and the like.

The drive section 40 includes a motor 44 having a revolving shaft 48 and an output shaft 100 operatively connected at one end or a lower end thereof through a reduction gear mechanism to the revolving shaft 48 of the motor 44. The output shaft 100 is so arranged that one end thereof is downwardly projected from a bottom of a recess 102 formed at a center of an upper portion of the casing 38. The output shaft 100 has a grooved or recessed support 104 mounted on the other end or an upper end thereof and a gear 106 mounted at the lower end thereof. On the revolving shaft 48 of the motor 46 is fixed a gear 46.

The reduction gear mechanism includes a gear 108 fixed on a support shaft 110 and engaged with the gear 46, a gear 112 fixed on the support shaft 110 in parallel with the gear 108, a gear 114 fixed on a support shaft 116 and engaged with the gear 112, and a gear 118 fixed on the support shaft 116 in parallel with the gear 114. The gear 118 is engaged with the gear 106 fixed on the proximal end

of the output shaft 100.

A portion of the so-constructed reduction gear mechanism extending from the gear 108 to the support 104 constitutes a transmission mechanism for transmitting the drive force of the motor 44.

A drive circuit for the motor 44 may be constructed in substantially the same manner as shown in Fig. 7. More particularly, the drive circuit includes a sensor switch 76 which includes a sensor for sensing a physical stimulus such as sound, light, heat or the like and serves to actuate the motor 44. The drive circuit also includes a main switch 78 and a power supply 80. The sensor switch 76 and main switch 78 each are arranged in a manner to be exposed at a part thereof from an upper surface of the flowerpot 32 and the power supply 80 is replaceably arranged in the casing 38. Alternatively, the power supply may be eliminated. In this instance, the movable decorative assembly may be connected to an external power supply.

The hollow covering or cactus 34 is provided therein with variation means 82 for varying the configuration and/or appearance of the covering or cactus 34. The variation means 82 includes at least one curved actuation shaft 120 made of a flexible or bendable material and at least one rotary actuation member 122 biasedly mounted on the actuation shaft 120 so that both ends of the member 122 describe loci different from each other. In other words, the actuation member 122 is so arranged that a center of rotation of the member 122 is derived from a center of the actuation member. In the illustrated embodiment, one such actuation shaft 120 and a plurality of the actuation members are arranged. The actuation shaft 120 is provided at a lower end thereof with a projecting connection 124, which is fittedly engaged with the recessed or grooved support 104 so as to be connected to the output side of the drive section 40, resulting in being revolved.

The actuation members 122 each are so arranged that a part of a locus of the rotation extends outwardly from the configuration of the covering or cactus 34 defined when it is kept free or unrestrained.

In the movable decorative assembly of each of the embodiments shown in Figs. 8 to 10, when the sensor switch 76 detects a predetermined external stimulus such as sound while the main switch 78 is kept turned on, the motor 44 is rotated, resulting in the reduction gear mechanism being actuated because the gear 46 fixed on the revolving shaft 48 of the motor 44 is engaged with the gear 108 constituting a part of the reduction gear mechanism. Also, the gear 118 of the mechanism is engaged with the gear 106 provided at the proximal end of the output shaft 100, resulting in the output shaft 100 being revolved.

Thus, the curved actuation shaft 120 connected through the connection 124 to the support 104 of the output shaft 100 is revolved, so that the actuation members 122 may be revolved. At this time, the distal end of each of the actuation members is so moved that its locus extends outwardly beyond the configuration of the covering or cactus 34 obtained when it kept free, so that the configuration and appearance of the cactus may be varied and the symbolic elements 42 may be moved, resulting in unexpected interest and surprise being exhibited. Also, the variation means 82 is not observed from the exterior, so that the viewer may take additional interest.

Figs. 11 and 12 illustrate still another embodiment of a movable decorative assembly according to the present invention.

A movable decorative assembly 30 of the illustrated embodiment includes a flowerpot 32 and a hollow covering 34 formed in imitation of a cactus which define the appearance of the assembly in cooperation with each other. The cactus 34 is provided therein with an inner space 36. At least the cactus 34 of the movable decorative assembly 30 is made

of a deformable material such as cloth, polyvinyl chloride or the like.

In the flowerpot 32 are arranged a motor 44, a transmission mechanism 126 for transmitting the drive force of the motor 44, a power supply 80, and a sensor switch 76 including a sensor adapted to detect a predetermined external stimulus such as sound or the like. The motor 44, power supply 80 and sensor switch 76 are fixed through suitable means (not shown) at the central of the flowerpot 32, the central portion of the bottom of the flowerpot 32 and the upper portion of the side surface of the flowerpot 32, respectively. The sensor switch 76 is exposed at a part thereof from the movable decorative assembly 30. Thus, the sensor switch 76 detects sound to actuate the motor 44 for a predetermined period of time. Reference numeral 78 designates a main switch adapted to be operated from the exterior.

A drive section 40 comprises the motor 44, a drive circuit 128 and the transmission mechanism 126. The drive circuit 128 may be constructed in substantially the same manner as described above. The transmission mechanism 126 includes a pair of reduction gears 130 and 132 and a pair of actuation shafts 134 and 136 respectively connected to the gears 130 and 132. Alternatively, the drive circuit 128 may be constructed so as to be alternately turned on and turned off when the sensor switch 76 detects sound.

The reduction gears 130 and 132 of the transmission mechanism 126 are operatively connected to a revolving shaft 48 of the motor 44. For this purpose, the gears 130 and 132 are engaged with a gear 46 fixed on the revolving shaft 48 of the motor 44.

The assembly of the illustrated embodiment also includes a pair of actuation elements 86 and 86' respectively mounted at proximal ends thereof on the actuation shafts 134 and 136 constituting the output side of the drive section 40. Also, the actuation elements 86

and 86' respectively have distal ends 86a and 86a' each moved so as to describe a locus extending outwardly from the outer configuration of the hollow cactus 34 defined when it is kept free or unrestrained, when the elements 86 are revolved through the actuation shafts 134 and 136. This results in the actuation elements 86 and 86' vary the configuration of the hollow cactus from the interior.

In the illustrated embodiment, two such actuation elements 86 and 86' are arranged, however, it is not limited to such construction. The arrangement of three or more such actuation elements complicates variations in configuration and/or appearance of the hollow cactus 34 to further enhance unexpected interest exhibited by the assembly. Also, the movement of the actuation elements 86 and 86' are not limited to rotational movement. It may be reciprocation.

In the movable decorative assembly 30 of the illustrated embodiment constructed as described above, when the sensor switch 76 detects a predetermined external stimulus while the main switch is kept turned on, the motor 44 is rotated for a predetermined period of time, resulting in the gears 130 and 132 of the transmission mechanism 126 engaged with the gear 46 fixed on the revolving shaft 48 of the motor 44 being likewise rotated to lead to the rotation of the actuation elements 86 and 86' mounted on the actuation shafts 134 and 136. This causes the distal ends 86a and 86a' of the actuation elements 86 and 86' to forcedly vary the configuration and appearance of the hollow cactus 34, so that it may carry out unique motion sufficient to cause a viewer to take interest and exhibit imaginative power. In addition, a variation means 82 is not observed from the exterior, the interest is further enhanced.

Also, the placing of the movable decorative assembly 30 in a parlor, an entrance or the like, when a visitor opens its door, causes the sensor switch to detect

a variation of an external stimulus to operate the motor, resulting in giving the visitor unexpected interest and surprise.

The assembly 30 of the embodiment is not limited to the appearance and actuation mechanism described above. For example, a reciprocating mechanism may be arranged in the hollow cactus 34 to reciprocate the actuation elements 86 and 86' in lateral and/or vertical directions, resulting in varying the appearance of the assembly as shown in Fig. 13. Alternatively, the actuation mechanism may be constructed to exhibit a combination of reciprocation and rotation. Further, a sensor which detects an external stimulus other than sound such as light, smell, heat, smoke or the like.

Thus, it will be noted that the above-described embodiments each exhibit unexpected variations in configuration and/or appearance of the assembly while maintaining a conventional ornamental effect in its stationary state.

Figs. 14 to 18 show yet another embodiment of a movable decorative assembly according to the present invention.

An assembly 30 of the embodiment generally includes a base 32 formed in imitation of a flowerpot and a hollow covering 34 formed in imitation of a cactus and provided therein with an internal space 36. In the flowerpot 32 and hollow cactus 34 are arranged a drive section 40 and variation means 82, respectively.

The hollow cactus 34 may be made by applying a vinyl chloride coating material on a flexible foamed urethane base. Such construction of the cactus 34 permits the coating to prevent penetration of air and water through the cactus 34 and increase frictional resistance and tearing strength of the cactus 34 without deteriorating the flexibility and elasticity of the foamed urethane. On the hollow cactus 34 are put symbolic elements 42 such as a

glass, a maracas the like.

The drive section 40 includes a motor 44 having a revolving shaft 48, a gear 46 fixed on the revolving shaft 48 of the motor 44, a gear 140 fixed on one end of a support shaft 142 and engaged with the gear 46, a gear 144 fixed on the other end of the support shaft 142, a gear 146 fixed on a support shaft 148 and engaged with the gear 144, a rotary disc 150 fixed on the support shaft 148 in parallel with the gear 144, and a gear 152 engaged with the gear 146. The rotary disc 150 is provided at a portion thereof in proximity to an outer periphery thereof with a pin 154 and the gear 152 is rotatably supported in a receiving portion of a support member 158 mounted on a casing 160 and is provided at a central portion thereof with an aperture 162.

A drive circuit for the motor 44 may be constructed as shown in Fig. 18. More particularly, it includes a main switch 78, a sensor switch 76 adapted to operate upon detection of sound of a predetermined level or more, a battery 164 for a power supply and a variable resistor 166. The main switch 78, sensor switch 76 and variable resistor 166 each are exposed at a part thereof from an upper portion of the flowerpot 32 and the battery 164 is replaceably arranged.

The variation means 82 arranged in the hollow cactus 34 functions to vary an appearance of the cactus. For this purpose, the variation means 82, as shown in Figs. 15 to 17, includes an oscillating element 168, a rotating element 170 arranged in the oscillating element 168 and a vertically moving element 172 operatively connected to the rotating element 170. More particularly, the oscillating element 168 is provided on a central portion of a front surface thereof with a shaft member 174 projecting therefrom, which is also supported on the casing 160. The oscillating element 168 is also provided on a central portion of a rear surface thereof with a hollow shaft

member 176, which is fittedly supported in a recess 178 formed on a surface of the support member 158. This causes the oscillating member 168 to carry out oscillation about the shaft members 174 and 176. The oscillating element 168 is provided on one side of a lower portion thereof with an engagement member 180 of a substantially U-shape in section in a manner to obliquely inwardly extend therefrom. The engagement member 180 is engaged with the pin 154 of the rotary disc 150.

The rotating element 170 is provided on a portion of a front surface thereof in proximity to a periphery thereof with an engagement pin 182 and at a center of a rear surface thereof with a rectangular support shaft 184. The support shaft 184 is so arranged that its distal end is projected from the hollow shaft member 176 and fitted in the rectangular aperture 162 of the gear 152 received in the receiving portion 156 of the support member 158, resulting in the operation of the drive section 40 rotating the rotary element 170.

The vertically movable element 172 is formed into a T-shape and so arranged that its distal end is projected from an upper opening 186 of the oscillating element and fixed at an upper portion of the hollow covering or cactus 34 by means of a screw 190. Also, the oscillating element 168 is provided at a lower portion thereof with an elongated aperture 192 laterally extending, in which the engagement pin 182 of the rotary element 170 is loosely fitted. This results in the vertically movable element 172 being operated with the rotation of the rotary element 170.

In the movable decorative assembly 30 of the illustrated embodiment constructed as described above, when the sensor switch 76 detects sound of a predetermined level or more to supply a detection signal to a base of a transistor Tr1, the transistor is turned off. This leads to the supply of a drive voltage to a base of a transistor Tr2 to cause the transistor Tr2 to be turned off. This

results in a voltage at a point A being zero, leading to the turning-off of a transistor Tr3. Thus, the electric power of the power supply 164 is supplied through the transistor Tr3 to the motor 44 to drive and control the motor 44.

When the supply of a detection signal from the sensor switch 76 to the transistor Tr1 is interrupted, the transistor Tr1 is turned on to turn off the transistor Tr2. This causes the voltage at the point A to be increased to turn off the transistor Tr3 to stop the supply of an electric power from the power supply 164 to the motor 44. At this time, in order to prohibit the operation by the input to the sensor switch 76 until the motor 44 is fully stopped, a feedback circuit 194 is arranged so as to function in the following manner.

More particularly, when the transistor Tr2 is turned off to cause the voltage at the point A to be increased, the transistor Tr4 is turned on and kept turned on for a predetermined period of time. Accordingly, even when a detection signal is supplied from the sensor switch 76 to the transistor Tr1 to turn on the transistor Tr1 under such conditions, the supply of a drive voltage to the base of the transistor Tr2 is stopped, resulting in the transistor Tr2 being kept turned off. Such operation of the feedback circuit 194 prohibits the input to the sensor switch 76.

The sensitivity of the sensor switch 76 may be adjusted by means of the variable resistor 166 arranged between the battery 164 and the bases of the transistors Tr1 and Tr2.

The drive of the motor 44 permit the drive section 40 comprising a plurality of the gears to be actuated. The engagement pin 154 of the rotary disc 150 juxtaposed with the gear 146 of the drive section 40 is engaged with the U-shaped engagement member 180 provided at the lower portion of the the oscillating element 168, so that the oscillating

element 168 may be oscillated about the shaft members 174 and 176. The rotary element 170 is rotated concurrent with such movement of the oscillating element 168, because the support shaft 184 of the rotary element 170 arranged in the oscillating element 168 is engagedly fitted in the aperture 162 of the gear 152 of the drive section 40.

The engagement pin 182 projectedly provided on the surface of the rotary element 170 is loosely fitted in the laterally extending elongated aperture 192 and the distal end of the vertically movable element 172 is fixed at the upper portion of the hollow covering 34, therefore, the rotation of the rotary element 172 permits the vertically movable element 172 to be vertically moved. This results in the expansion and contraction of the hollow cactus 34. Also, the hollow cactus 34 is swung back and forth due to the oscillation of the oscillating element 168.

As described above, in the movable decorative assembly 30 of the illustrated embodiment, the hollow covering 34 made in imitation of a cactus is operatively connected to the variation means 82 including the oscillating element 168 provided in the hollow cactus 34 and the vertically movable element 172 supported at the oscillating element 168, so that the operation of the variation means 82 by the drive section 40 causes the hollow cactus 34 to carry out back and forth movement and expansion. Also, the hollow covering 34 is formed by applying the vinyl chloride coating material on the foamed urethane body, resulting in exhibiting enhanced frictional resistance and tearing strength without deteriorating the flexibility and elasticity. Also, the drive circuit for the motor 44 includes the sensor switch 76 actuated upon detection of sound, so that the assembly may be operated in response to hand clapping. This results in a viewer being impressed as if there were any communication between the viewer and the decorative assembly.

Fig. 19 shows a modification of the embodiment of

Fig. 14 described above, which is constructed in substantially the same manner as the embodiment of Fig. 14 except the appearance of a hollow covering 34.

Figs. 20 and 21 show still a further embodiment of a movable decorative assembly of the present invention.

An assembly 30 of the embodiment generally includes a base 32 formed in imitation of a flowerpot and a hollow covering 34 formed in imitation of a cactus, arranged on the flowerpot 32 and provided therein with an internal space. In the flowerpot 32 and hollow cactus 34 are arranged a drive section 40 and variation means 82 operatively connected to the drive section 40, respectively.

The hollow cactus 34 may be made by applying a vinyl chloride coating material on a flexible foamed urethane base. Such construction of the hollow cactus 34 permits the coating to prevent penetration of air and water through the cactus 34 and increase frictional resistance and tearing strength of the cactus 34 without deteriorating the flexibility and elasticity of the foamed urethane base. On the hollow cactus 34 are put symbolic elements 42 such as a hat, a glass and a guitar. The hollow covering 34 is fixed at a lower portion thereof on an upper surface of the base 32.

The drive section 40 includes a motor 44 having a revolving shaft 48, a gear 46 fixed on the revolving shaft 48 of the motor 44, a gear 196 fixed on one end or a lower end of a support shaft 198 and engaged with the gear 46, and a gear 200 fixed on the other end or an upper end of the support shaft 198.

The drive of the motor 44 permits the gears of the drive section 40 to be rotated. The gear 200 of the drive section 40 is engaged with a gear 202 provided at a lower end of an actuation core 120 of the variation means 82, so that the operation of the drive section 40 causes the actuation shaft or core 120 to be rotated and the actuation

members 122 and 122' mounted on the actuation core 120 to be likewise rotated. The actuation members 122 and 122' are so arranged that they outwardly force the hollow covering 34 to deform it, resulting in the appearance of the covering 34 being varied.

Also, the drive circuit for the motor 44 includes a sensor switch 76 actuated upon detection of sound, so that the assembly may be operated in response to hand clapping by a viewer. This results in the viewer being impressed as if there were any communication between the viewer and the decorative assembly. Further, the hollow covering 34 is formed by applying the vinyl chloride coating material on the foamed urethane body, resulting in exhibiting enhanced frictional resistance and tearing strength without deteriorating the flexibility and elasticity. The coating also forms a protective film on the urethane base, to thereby effectively prevent penetration of air and water therethrough.

Figs. 22 and 23 each show a modification of the embodiment shown in Figs. 20 and 21. The modification of Fig. 22 includes symbolic elements 42 such as a ribbon, a glass and a tambourine, whereas the modification of Fig. 23 includes symbolic elements 42 such as a hat, a glass and a banjo. The remaining part of each of the modifications may be constructed in substantially the same manner as the embodiment of Figs. 20 and 21.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all the generic and specific

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features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is Claimed is:

1. A movable decorative assembly comprising:
a drive section including a motor, a drive circuit for driving said motor and a transmission mechanism for transmitting an output of said motor;

a hollow covering made of a deformable material and arranged in a manner to be fixed relative to said drive section; and

variation means operatively connected to said drive section and including a covering actuator for pressingly actuating said covering to vary the configuration of said covering;

said variation means actuating said covering actuator to cause a locus of movement of said covering actuator to extend outwardly from the configuration of said hollow covering defined when said covering is kept free, resulting in outwardly pressing said covering from the inside to vary the configuration of said covering.

2. A movable decorative assembly as defined in Claim 1, wherein said drive circuit includes a sensor switch including a sensor for detecting a predetermined external stimulus and controlling the operation of said motor.

3. A movable decorative assembly as defined in Claim 2, wherein said external stimulus is selected from the group consisting of sound, light, heat, smoke and smell.

4. A movable decorative assembly as defined in Claim 2, wherein said drive circuit includes a power supply.

5. A movable decorative assembly as defined in Claim 1, wherein said covering actuator comprises at least one actuation member carrying out rotation and so arranged that a center of the rotation is deviated from a center of said actuation member.

6. A movable decorative assembly as defined in Claim 5, wherein said actuation member is connected directly to the output side of said drive section.

7. A movable decorative assembly as defined in Claim 5, wherein said variation means further comprises at least one actuation shaft rotatably arranged and connected to the output side of said drive section;

said actuation member is mounted on said actuation shaft and rotated about said actuation shaft.

8. A movable decorative assembly as defined in Claim 5, wherein said actuation shaft is curved.

9. A movable decorative assembly as defined in Claim 1, wherein said covering actuator comprises an oscillating element connected to an output side of said drive section and an actuation element arranged so as to carry out reciprocation with respect to said oscillating element.

10. A movable decorative assembly as defined in Claim 1, wherein said covering actuator comprises an oscillating element, a rotary element arranged in said oscillating element and a vertically movable element operatively connected to said rotary element.

11. A movable decorative assembly as defined in Claim 10, wherein said drive circuit includes a sensor switch including a sensor for detecting a predetermined external physical stimulus and controlling the operation of said motor.

Amendments to the claims
have been filed as follows

1. A movable decorative assembly comprising:
a drive section including a motor, a drive circuit for driving said motor and a transmission mechanism for transmitting an output of said motor;

a hollow covering made of a deformable material and arranged in a manner to be fixed relative to said drive section; and

variation means operatively connected to said drive section and including a covering actuator for pressingly actuating said covering to vary the configuration of said covering;

said variation means actuating said covering actuator to cause a locus of movement of said covering actuator to extend outwardly from the configuration of said hollow covering defined when said covering is kept free, resulting in outwardly pressing said covering from the inside to vary the configuration of said covering.

2. A movable decorative assembly as defined in Claim 1, wherein said drive circuit includes a sensor switch including a sensor for detecting a predetermined external stimulus and controlling the operation of said motor.

3. A movable decorative assembly as defined in Claim 2, wherein said external stimulus is selected from the group consisting of sound, light, heat, smoke and smell.

4. A movable decorative assembly as defined in Claim 2, wherein said drive circuit includes a power supply.

5. A movable decorative assembly as defined in Claim 1, wherein said covering actuator comprises at least one actuation member carrying out rotation and so arranged that a center of the rotation is deviated from a center of said actuation member.

6. A movable decorative assembly as defined in Claim 5, wherein said actuation member is connected directly to the output side of said drive section.

7. A movable decorative assembly as defined in Claim 5, wherein said variation means further comprises at least one actuation shaft rotatably arranged and connected to the output side of said drive section;

said actuation member is mounted on said actuation shaft and rotated about said actuation shaft.

8. A movable decorative assembly as defined in Claim 5, wherein said actuation shaft is curved.

9. A movable decorative assembly as defined in Claim 1, wherein said covering actuator comprises an oscillating element connected to an output side of said drive section and an actuation element arranged so as to carry out reciprocation with respect to said oscillating element.

10. A movable decorative assembly as defined in Claim 1, wherein said covering actuator comprises an oscillating element, a rotary element arranged in said oscillating element and a vertically movable element operatively connected to said rotary element.

11. A movable decorative assembly as defined in Claim 10, wherein said drive circuit includes a sensor switch including a sensor for detecting a predetermined external physical stimulus and controlling the operation of said motor.

12. A moveable decorative assembly comprising:

a drive mechanism including a drive section, a motor, a sensor switch and a transmission mechanism for transmitting an output of the motor, the motor being connected to the power supply through the sensor switch, the sensor of the sensor switch operating to actuate the motor on detection of a predetermined external stimulus; and

a hollow covering of deformable material defining a voluminous space in a rest position of said decorative assembly, said covering having an opening therein and being fixed relative to said drive mechanism in the region of said opening; and

variation means operatively connected to said drive mechanism through said opening and including a covering actuator located within said space, said covering actuator being substantially less voluminous than said space, said actuator being connected to the covering at a location on the inner surface thereof and/or being moveable within said space on a path that includes locations outside the configuration of the space defined in the rest position of the decorative assembly such that on actuation of the actuator the shape of the space and hence the configuration of substantially the whole of the unfixed part of the covering is varied.

13. A moveable decorative assembly according to claim 12, wherein the variation means comprises at least one non-linear actuation shaft operatively connected to said drive mechanism for rotation inside said covering and wherein at least one covering actuator is mounted on the actuation shaft.

14. A moveable decorative assembly according to claim 13, wherein the covering actuator(s) is(are) rotatably mounted on the actuation shaft.

15. A moveable decorative assembly according to claim 13 or 14, wherein the actuator(s) is (are) disc shaped.

16. A moveable decorative assembly according to claim 12, wherein the actuation member is driven so as to reciprocate and rock

17. A moveable decorative assembly according to claim 16, wherein the actuation member is connected to the covering.

18. A moveable decorative assembly according to any one of claims 12 to 17, wherein said external stimulus is sound, light, heat, smoke or smell.

19. A moveable decorative assembly substantially as described with reference to Figs. 1-7 of the accompanying drawings.

20. A moveable decorative assembly substantially as described with reference to Figs. 7-10 of the accompanying drawings.

21. A moveable decorative assembly substantially as described with reference to Figs. 7, 11-13 of the accompanying drawings.

22. A moveable decorative assembly substantially as described with reference to Figs. 14-19 of the accompanying drawings.

23. A moveable decorative assembly substantially as described with reference to Figs. 20-23 of the accompanying drawings.

24. A mechanism for operating a moveable decorative assembly substantially as described with reference to Figs 2, 5 & 7 of the accompanying drawings.

25. A mechanism for operating a moveable decorative assembly substantially as described with reference to Figs. 7 & 9 of the accompanying drawings.

26. A mechanism for operating a moveable decorative assembly substantially as described with reference to Figs. 7 & 12 of the accompanying drawings.

27. A mechanism for operating a moveable decorative assembly substantially as described with reference to Figs. 15-18 of the accompanying drawings.

28. A mechanism for operating a moveable decorative assembly substantially as described with reference to Figs. 18 & 21 of the accompanying drawings.